

CLAIMS

1. A method of testing a hold (120, 220, 520) attached to an object (130, 230, 530),
5 the method comprising the steps of:
 - bringing a member (110, 210, 510) into contact with said hold,
 - contactlessly detecting at least one resonance frequency of said member (110, 210, 510) when it is in contact with said hold (120, 220, 510); and
 - interpreting the detected resonance frequency in terms of the degree of attachment
10 of the hold with respect to the object.
2. The method according to claim 1, including the step of detachably attaching said member to said hold.
- 15 3. The method according to claim 1 or 2, wherein said member (110, 120, 520) comprises a cantilever beam.
4. The method according to any of preceding claims, wherein said member (110) comprises a magnetic part (140).
- 20 5. The method according to claim 4, wherein said resonance frequency is detected by means of a coil (153).
6. The method according to any of claims 1 to 3, wherein said member (210) comprises
25 a marking (240).
7. The method according to claim 6, wherein said resonance frequency is detected by means of an illumination detector (253a).
- 30 8. The method according to any of claims 1 to 3, wherein said member (510) is made of a ferromagnetic material.
9. The method according to claim 8, wherein said resonance frequency is detected by means of said member disturbing a magnetic field (565).
- 35 10. The method according to claim 3, wherein said hold includes a threaded bore, and said cantilever beam is screwed to or into the hold.

11. The method according to any of claims 1 to 10, including the step of comparing the detected resonance frequency with one or more values for the resonance frequencies of the same or similar members in contact with other holds.

5 12. A method according to any of claims 1 to 11, including the step of comparing the detected resonance frequency with one or more values, taken at different times, for the resonance frequencies of the same or similar member in contact with the same hold.

10 13. The method according to any of claims 1 to 12, including the steps of exciting the member with a force, detecting the response of the member to the force.

14. A method according to claim 13, including deriving an output which is the ratio of the voltage of the response signal to that of the excitation signal.

15 15. A method according to any of previous claims, wherein said hold is an implant and said object is a bone.

20 16. An arrangement (100, 200, 500) for testing an implant (120, 220, 520) attached to a bone (130, 230, 530), the arrangement comprising:

- a member (110, 210, 510) adapted to be releasably attached to said implant,
- detecting means (150, 250, 550) for detecting at least one resonance frequency of the member when it is attached to the implant,

characterized in

25 that said member (110, 210) comprises a detectable part (140, 240, 540) and that said detecting means (150, 250) comprises a detector (150, 250) for contactless detection of said detectable part.

30 17. The arrangement (100) according to claim 16, wherein said detectable part comprises a magnetic member (140).

18. The arrangement (100) according to claim 17, wherein said detector (150) comprises a coil (153).

35 19. The arrangement (100) according to any of claims 16 to 18, further comprising an amplifier (154), a processor (155), and a data store (156).

20. The arrangement (100) according to claim 16, wherein signals detected by the

detector (151) are amplified by said amplifier (154) and applied as an input to be analysed; the analysed output, which represents a ratio of a response voltage to the excitation, is fed to said processor, which varies the frequency output of the oscillator of the analyser, and stores the results in said data store (156).

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21. The arrangement (200) according to claim 16, wherein said detectable part comprises a marker (240).

10 22. The arrangement (200) according to claim 21, wherein said detector (250) comprises an illumination detector (253b).

23. The arrangement (200) according to claim 21 or 22, further comprising an illuminator (253a).

15 24. The arrangement (500) according to claim 16, wherein said detectable part consists of a ferromagnetic material.

25. The arrangement (500) according to claim 24, wherein said detector (550) comprises a coil (553) for detecting disturbances in an external magnetic field.

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26. The arrangement (100, 200) according to any of claims 16 to 25, wherein the member comprises a cantilever beam.

25 27. The arrangement (100, 200) according to claim 26, wherein the beam is arranged or adapted to resonate at a frequency within the range of about 1 to 20 kHz, preferably about 1 to 10 kHz, and more preferably of the order of 8 kHz.

28. The arrangement (100, 200, 500) according to any of claims 16 to 27, wherein said member (110, 210, 510) is disposable.

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29. A disposable implant testing part (110, 210, 510) provided for testing an implant (120, 220, 520) attached to a bone (130, 230, 530), said part comprising a detectable part (140, 240, 540), which can be detected contactless by means of a detector.